

Elaine McCluskey

From: Elaine McCluskey [mccluskey@fnal.gov]
Sent: Wednesday, September 15, 2004 2:46 PM
To: 'Lee Hammond'; 'Steve Krstulovich'; Bill Foster; Chuck Federowicz; 'Dave Neuffer'; David Finley; Dixon Bogert; Duane Plant; Ed Crumpley; fgarcia@fnal.gov; Rich Stanek; Shekar Mishra; 'Steve Geer'; Tom Lackowski; Vic Kuchler; Weiren Chou
Subject: Notes from 9/15/04 Linac Proton Driver Meeting

Attendees: Bill Foster, Duane Plant, Chuck Federowicz, Fernanda Garcia, Elaine McCluskey, Dave Finley, Weiren Chou, Tom Lackowski, Dixon Bogert, Lee Hammond, Steve Krstulovich

Items discussed:

1. Cooling: Steve and Lee brought thoughts about how cooling for the 0.5MW initial machine and 2MW upgrade could be accomplished:
 - a. Ponds: drawing presented showing 3 horseshoe ponds along new linac inside Main Ring for 4MW heat rejection (0.5 MW machine) that could be expanded to one large pond for future 12MW heat rejection (2 MW machine). Steve discussed how ponds limit how cold the water can really be, and that the water temperature has been a concern for installations such as MuCool. Steve referenced the criteria/parameters listed in the 8GEV Linac document that call for 90 deg water for a combination of RF and cryo uses. He said this is difficult to achieve with ponds.
 - b. An alternate to ponds is to use chilled water (CHW) for RF and cryo instead. Steve indicated that CHW from CUB is very available for the 0.5MW machine even with the existing linac/booster running (important for transitional time of startup for PD).
 - c. Question of reliability and long-term use of CUB: Steve explained that equipment and infrastructure of this facility were upgraded during the UIP project. Equipment probably has 30+ year life. Current cooling capacity is 5000 tons (@ 3.5MW/ton) with redundancy.
 - d. Question if linac is tuned to temperature? CHW directly to linac better for this. What about HVAC cooling requirements, still use ponds? No, if CHW coming to gallery anyway.
 - e. Conclusion was that it's probably better not to use ponds, and to take CHW to linac and use it for HVAC, cryo, and RF cooling. Run double line (probably HDPE to reduce corrosion) from CUB to end of linac, possibly trying to miss layout of future beamlines.
2. Other utility runs: pond drawing showed likely layout for connection from upstream end of linac to new utility corridor from CDF-D0. This would support ICW, sanitary, DWS, gas. Loop for ICW would be back to CUB. Would also want redundancy for CHW.
3. Upgrades to MI:
 - a. Dixon outlined his discussion with John Reid regarding RF changes at MI. John would only comment on 0.5MW machine requirements:
 1. existing strip lines would be used
 2. existing RF gallery footprint is adequate
 3. problem is less available space in MI60 tunnel for add'l RF
 4. tricky from John's perspective to do timing connection if some RF is put at MI30. This might require a light pipe connection. John is unenthusiastic about locating RF at MI30, since this would make a split system. But, straight sections are currently unused at MI30, and not at MI60
 5. Dixon mentioned that possible changes to beam (moving coalescing) might help create additional straight sections available at MI60.
 - b. Bill concluded this discussion by stating that we should look at costs of
 1. putting all RF at MI60 for heat load rejection, etc. This would require using existing cavities in a new way.
 2. putting ½ RF at MI30 and ½ RF at MI60, including reconstructing tunnel, adding MI60-type bldg (w/ gallery, utilities, cavities), no light link
 - c. Dave brought up ramping changes in MI – does this impact civil construction? Weiren said no, heat load difference is minor.
 - d. Chuck is getting coordinates for Weiren from Alignment of magnets Q103 and 104.

4. Meeting location is likely going to be moved to conFESSional – will be well documented in future meeting agendas.
5. Graphic artists: Elaine said that FESS/E is contracting with A/E firm for drafting and graphic services – will be available for drawing for other than civil if necessary for report.
6. Other locations for Linac: Duane asked if consideration of placing linac to southeast of MI for injection in MI50 region had been considered. Would eliminate crossing other tunnels. Bill explained this location is difficult for doing injection because of existing equipment in tunnel at MI52. Also, this can only serve MI at this location. Putting inside the ring also gives geography for other missions, for which there is no room to southeast of MI.

ACTION ITEMS:

Steve/Lee will put together schematics + costs for the minimum investment to support the 0.5 MW machine at MI60 and new Linac

ITEMS FOR NEXT WEEK:

NEXT MEETING TO BE 9/22/04 AT 9:30 A.M. IN WH5NE the conFESSional.

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